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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,205	03/17/2004	Michael Leu	4999-0030	3767
35301 7590 03/19/2009 MCCORMICK, PAULDING & HUBER LLP CITY PLACE II 185 ASYLUM STREET HARTFORD, CT 06103				
EXAMINER				
ABOAGYE, MICHAEL				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
03/19/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,205

Applicant(s)

LEU ET AL.

Examiner

MICHAEL ABOAGYE

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1, recites that the bondhead "may be" accelerated and decelerated. Use of the phrase "may be" implies an optional limitation therefore it is unclear as to whether or not Applicant is positively claiming that the bondhead is accelerated and decelerated.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Applicant's Specification, para, [0002]-[0003]) in view of Razon et al. (US 5890643 and European Safety Principles, EU Directives and Legislation January 1, 1997 (IDS).

Regarding claims 1 and 2, AAPA teaches a wire bonder for wiring semiconductor chips, comprising a bondhead, a power module configured for supplying electrical power for operating a drive of the bondhead, a power switch configured for controlling the supply of electrical power by the power module to the drive and at least one emergency switch (Applicant's specification, para [0002-0003]).

AAPA fails to teach a timer. AAPA also fails to teach a control program, activation of the emergency switch causing the control program to complete a current bond cycle and then suspend the further wiring and for starting the timer, the timer being configured for opening the power switch after a predetermined period of time has elapsed, the predetermined period being sufficient to complete the current bond cycle as set forth in claim.

Razon et al. teaches a wire bonding machine having a control program associated with a central host CPU (74, figure 19) configured for processing all signals issued from transducers and sensors, said control program also configured for initiating operations including movement of the wire bondhead (column 6, lines 28-41 and lines 55-67). Razon et al. also teaches programmable switches that are controlled by the host CPU (see, item 94, figure 19). Razon et al. further teaches a timer for controlling the energizing sequence of the wire bonding tool transducer (Razon et al. column 2, lines 20-24).

It would have been obvious to one of ordinary skill in the art at the time invention to modify the wire bonding tool of AAPA to include a control program as taught by Razon et al. to receive and process all signals from sensors and transducer and issue feedback command to offset errors and also for monitoring the wire bonding process

(see, Razon et al., column 1, lines 62-67, column 2, lines 10-14 and column 6, lines 28-41 and 55-67). Furthermore to modify the bonding tool of AAPA to include a timer as taught by Razon et al. in order to control the time sequence for moving the bonding tool. (See, Razon et al. , column 2, lines 20-24).

With respect to the configuration of emergency switch and the control program, the European Safety Principles document discloses as known, two categories of emergency switches. Category 1 emergency switch is characterized such that when activated causes abrupt power cut off, while category 2, when activated causes a controlled stop with power left available to the machine actuators thereby allowing a time lag for the machine to come to a safer stop and also enables resetting the emergency stop without causing any safety hazard to operator nor the machine (see, European Safety Principles, EU Directives and Legislation January 1, 1997, page 15).

It would have been obvious to one of ordinary skill in the art to modify the combined invention of AAPA and Razon to use the known category 2 emergency switch. Indicated know by European Safety Principles, EU Directives and Legislation January 1, 1997) so that on activation would not cause sudden power cut off but coast the bonding wire machine to a controlled stop making it possible for a bonding sequence to be completed and also subsequent reset of the emergency stop safer.

With respect to the new limitations introduced into claim 1, it is noted that the bondhead of all conventional wire bonding machines is capable of or configured to accelerate and decelerate during the downward and upward motion of the bonding capillary, therefore AAPA satisfies that limitation. However, it is noted that this limitation is optional.

Regarding claim 3, the combined apparatus of AAPA, Razon et al. and European Safety Principles document, disclose power switch, an emergency switch and a control program, said apparatus is capable of instantaneously switch off all electrical consumers not required for completion of the current bond cycle when the sensor reports an interruption of the external power supply.

With respect to claims 13-15, AAPA and Razon fail to teach light curtains.

European Safety Principles document discloses safety light curtains as safety device used at machinery work areas for protecting plant personnel from injuries related to hazardous machine motion. Said light curtains are photoelectric presence sensors which operate as control switches. Said light curtains apart from offering optimal safety, are ergonomically sound and also allow for greater productivity (see, European Safety Principles, EU Directives and Legislation January 1997-January 1, 1997, page 39).

It would have been obvious to one of ordinary skill in the art to modify the combined invention of AAPA and Razon to use safety light curtains as disclosed by European Safety Principles document to protecting plant personnel from injuries related to hazardous machine motion at working areas (see, European Safety Principles, EU Directives and Legislation January 1997-January 1, 1997, page 39).

The combined apparatus of AAPA of Razon as modified by European Safety Principles document is therefore capable of completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

3. Claims 4-12 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA (Applicant's Specification, para, [0002]-[0003]) in view of

Razon et al. (US 5890643) and European Safety Principles, EU Directives and Legislation January 1, 1997 as applied to claim 1 above and further in view of Aragaki (JP 08-031857).

With respect to claims 4-6, the combination of AAPA, Razon et al. and European Safety Principles document teach an emergency switch that can be activated when an error signal is issued and a controller that can coast the wire bonder to a controlled stop, however they are silent on pressure supply line and a pressure sensor.

Aragaki teaches a wire bonder that utilizes air feed and extraction to control the wire tension: an air or pressure supply line by a pipe (15) through a control port 7 configured for sensing air pressure and sending signal to a central CPU (33) that controls or causes a switch 23 to regulate a valve (19) associated with the air pipe (Aragaki, abstract, para, [0002], [0004]-[0006], [[0010] and figures 1-5)

It would have been obvious to one of ordinary skill in the art to modify the combined invention of AAPA, Razon and European Safety Principles document to use air feed to or air extraction from the wire bonding capillary as taught by Aragaki in order to control the tension in the wire (Aragaki, abstract, para.[0002],[0004]-[0006], [[0010]). The combined apparatus of AAPA, Razon and European Safety Principles document as modified by Aragaki is capable of completing the current bond cycle and then suspending the further wiring when the pressure measured by the pressure sensor falls below a predetermined value.

With respect to claims 7-12, the combination of AAPA, Razon et al. and European Safety Principles document teach an emergency switch that can be activated when an error signal is issued and a controller that can coast the wire bonder to a

controlled stop, however silent on a vacuum supply and sensor for monitoring vacuum supply to the wire bonder.

Aragaki teaches a wire bonder that utilizes vacuum source to control the wire tension: vacuum pipe (17) through a control port 7 configured for sending signal (sensor) to a central CPU (33) that controls or causes a switch 25 to regulate a valve (21) associated with the vacuum pipe (Aragaki, abstract, para,[0002],[0004]-[0006], [[0010] and figures 1-5)

It would have been obvious to one of ordinary skill in the art to modify the combined invention of AAPA, Razon and European Safety Principles document to connect a vacuum pipe to the wire bonding capillary as taught by Aragaki in order to control the tension in the wire (Aragaki, abstract, para,[0002],[0004]-[0006], [[0010]). The combined apparatus of AAPA, Razon and European Safety Principles document as modified by Aragaki is capable of completing the current bond cycle and then suspending the further wiring when the vacuum measured by the vacuum sensor falls below a predetermined value.

With respect to claims 16-24, AAPA, Razon and Aragaki fail to teach light curtains.

European Safety Principles document discloses safety light curtains as safety device used at machinery work areas for protecting plant personnel from injuries related to hazardous machine motion. Said light curtains are photoelectric presence sensors which operate as control switches. Said light curtains apart from offering optimal safety, they allow for greater productivity and ergonomically sound (see, European Safety Principles, EU Directives and Legislation January 1997-January 1, 1997, page 39).

It would have been obvious to one of ordinary skill in the art to modify the combined invention of AAPA, Razon and Aragaki to use safety light curtains as disclosed by European Safety Principles document to protecting plant personnel from injuries related to hazardous machine motion at working areas (see, European Safety Principles, EU Directives and Legislation, January 1, 1997, page 39).

The combined apparatus of AAPA, Razon and Aragaki as modified by European Safety Principles document is therefore capable of completing the current bond cycle and then suspending the further wiring when the light curtain reports an interruption.

Response to Arguments

5. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Jessica L. Ward/

Supervisory Patent Examiner, Art Unit 1793